CLAIMS

What is claimed is:

1. A system that facilitates *in situ* determination of lubricity in a fluid, comprising:

a multi-element sensor positioned within a machine, wherein the multi-element sensor obtains data regarding a plurality of parameters of a fluid; and

a component that calculates lubricity of the fluid based at least in part upon the measured parameters.

2. The system of claim 1, further comprising a component that generates a Fourier Transform Infra Red spectrum plot based at least in part upon the measured parameters.

3. The system of claim 2, wherein temperature of the fluid is varied in proximity to the multi-element sensor.

4. The system of claim 2, further comprising a control component that facilitates automatically maintaining the fluid based at least in part on the calculated lubricity.

5. The system of claim 2, further comprising a control component that controls operation of a machine based at least in part on the calculated lubricity.

6. The system of claim 2, wherein the component that calculates the lubricity of the fluid comprises pattern recognition algorithms.

7. The system of claim 1, wherein the parameters measured are at least two or more of temperature, TCP presence within the fluid, ZDDP presence within the fluid, temperature, density, corrosion, viscosity, TAN, conductivity, pH, and oxidation.

8. The system of claim 1, wherein the component that calculates the lubricity of the fluid comprises at least one of a chemical model that correlates to readings with laboratory lubricity instruments and pattern-recognition algorithms that correlate with laboratory lubricity measurements

9. The system of claim 1, wherein the component that calculates the lubricity of the fluid comprises one or more artificial neural networks.

10. The system of claim 1, wherein the component that calculates the lubricity of the fluid comprises at least one of a support vector machine, expert system, Bayesian belief network, fuzzy logic algorithm, and a data fusion engine.

11. The system of claim 1, further comprising a control component that adjusts chemical composition of the fluid based at least in part upon the calculated lubricity.

12. The system of claim 1, wherein the parameters of the fluid are continuously measured.

13. The system of claim 1, the multi-element sensor comprising a three-electrode electro-chemical sensor that determines presence of additives that enhance lubricity.

14. The system of claim 1, wherein an electro-static field in the vicinity of the multi-element sensor is altered to determine presence of fluids providing enhanced lubricity.

15. The system of claim 1, the multi-element sensor comprising:

a plurality of finger-like elements employed in viscosity sensors, wherein a distance between three or more finger-like elements are different; and

a component that measures an ability of the fluid to adhere to the finger-like elements.

16. The system of claim 1, the multi-element sensor comprising:

a plurality of finger-like elements employed in viscosity sensors, wherein two or more of the finger-like elements have different surface coatings; and

a component that measures an ability of the fluid to adhere to the finger-like elements.

17. The system of claim 1, the multi-element sensor comprising:

two surfaces that are provided one or more forces, the forces causing the two surfaces to generate a frictional force between the two surfaces; and

a component that measures displacement relative to the two surfaces and the force causing the displacement.

18. The system of claim 17, wherein at least one of the two surfaces comprises an insulating layer, and further comprising a component that measures conductivity resulting from movement between the first surface and the insulating layer.

19. The system of claim 17, wherein at least one of the two surfaces comprises a layer of material that wears readily, and further comprising a component that measures capacitance resulting from wear of the material.

20. The system of claim 1, the multi-element sensor comprising:

a rotating disk;

a surface that tangentially contacts the rotating disk; and

a component that monitors a force required to rotate the disk a particular distance.

21. The system of claim 1 wherein the multi-element sensor is housed within a casing, the casing confining a sample of the fluid within the casing.

22. The system of claim 21 further comprising a heating/cooling component to alter temperature of the fluid confined within the casing.

23. The system of claim 1, further comprising a control component that adjusts operation of the machine based at least in part upon the calculated lubricity.

24. The system of claim 1, a data packet comprising the component calculates lubricity.

25. A method for calculating lubricity of a fluid within machinery, comprising:
obtaining data relating to a plurality of parameters within machinery; and
calculating lubricity based at least in part upon the obtained data.

26. The method of claim 25, further comprising generating a Fourier Transform Infra Red spectrum plot based at least in part upon the parameters.

27. The method of claim 25, further comprising automatically adjusting chemical composition of the fluid based at least in part upon the calculated lubricity.

28. The method of claim 25, the parameters being two or more of temperature, TCP presence within the fluid, ZDDP presence within the fluid, temperature, density, viscosity, TAN, conductivity, pH, and oxidation.

29. The method of claim 25, further comprising:
providing multiple viscosity sensors, the viscosity sensors comprising a plurality of finger-like elements;
coating the finger-like elements of disparate viscosity sensors with disparate surfaces; and
measuring an ability of fluid to adhere to the disparate surfaces of the finger-like elements.

30. The method of claim 25, further comprising:

providing multiple viscosity sensors, the viscosity sensors comprising a plurality of finger-like elements;

disparately spacing the finger-like elements of disparate viscosity sensors; and

measuring an ability of fluid to adhere to the disparate spaced finger-like elements.

31. The system of claim 25, further comprising:

generating a frictional force between two surfaces; and

fusing data relating to forces utilized to generate the frictional force and relative displacement of the two surfaces with the obtained data.

32. The system of claim 25, further comprising:

monitoring the fluid for presence of additives that enhance lubricity.

33. A system that facilitates controlling lubricity of a fluid, comprising:

means for obtaining data of various parameters of the fluid; and

means for fusing the data; and

means for outputting a measurement of lubricity from the fused data; and

means for altering chemical composition of the fluid based at least in part upon the measured lubricity.

34. The system of claim 33, further comprising means for generating a Fourier Transform Infra Red spectrum plot based at lease in part upon the fused data.

35. The system of claim 33, further comprising means for controlling machinery based at least in part upon the measured lubricity.

36. A system that facilitates synthesis of a Fourier Infra Red spectrum plot of a fluid, comprising:

a sensor comprising a plurality of sensor elements;

a stimulating component that employs voltages to stimulate at least two of the sensor elements to facilitate measurement of particular parameters of the fluid; and

a sensor fusion component that generates the Fourier Infra Red spectrum plot at least in part from measurements obtained from the stimulated sensor elements.

37. The system of claim 36, further comprising a sensor fusion component that generates the Fourier Infra Red spectrum plot at least in part from measurements obtained from the stimulated sensor elements.

38. The system of claim 36, wherein the stimulating component delivers a voltage that spans at least one of a particular range of frequencies and a particular range of amplitudes to facilitate obtainment of desirable parameters of the fluid.

39. The system of claim 36, wherein disparate sensing elements receive at least one of disparate voltage amplitudes and disparate voltage frequencies from the stimulating component.

40. The system of claim 36, further comprising a control component that facilitates automatic maintenance of the fluid based at least in part upon the Fourier Transform Infra Red spectrum plot.

41. The system of claim 36, further comprising a control component that controls operation of a machine based at least in part on the Fourier Transform Infra Red spectrum plot.

42. The system of claim 36, further comprising an artificial neural network that facilitates mapping of sensed parameters to the Fourier Transform Infra Red spectrum plot.

43. The system of claim 36, wherein the Fourier Transform Infra Red spectrum plot is generated for a particular range of wavenumbers.

44. The system of claim 36, wherein the Fourier Transform Infra Red spectrum plot is generated for a plurality of segmented ranges of wavenumbers.

45. A system that facilitates synthesis of a Fourier Infra Red spectrum plot of a fluid, comprising:

a sensor comprising a plurality of sensor elements;

a stimulating component that employs voltages to stimulate at least one of the sensor elements to facilitate measurement of particular parameters of the fluid;

a component that modifies at least one of an amplitude and frequency of the voltages based at least in part upon the measured parameters; and

a sensor fusion component that generates the Fourier Infra Red spectrum plot at least in part from measurements obtained from the stimulated sensor elements.

46. A system that facilitates analysis of a fluid, comprising:

a sensor comprising a plurality of sensing elements that measure various parameters of a fluid;

a stimulating component that employs voltages to stimulate at least two of the sensor elements to facilitate measurement of particular parameters of the fluid; and

a component that modifies the voltages output by the stimulating component based at least in part on the measured parameters.

47. The system of claim 46, further comprising a data fusion component that facilitates robust analysis of the fluid.

48. The system of claim 46, wherein the stimulating component delivers a voltage that spans at least one of a particular range of frequencies and a particular range of amplitudes to facilitate obtainment of desirable parameters of the fluid.

49. The system of claim 46, wherein disparate sensing elements receive at least one of disparate voltage amplitudes and disparate voltage frequencies from the stimulating component.